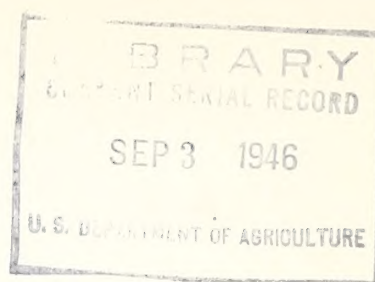


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U. S. DEPARTMENT OF AGRICULTURE

Forest Service

SOUTHEASTERN FOREST EXPERIMENT STATION

Technical Note No. 64

Asheville, N. C.
July 15, 1946X LOGGING AND MILLING STUDIES IN THE SOUTHERN APPALACHIAN REGION
PART III.--LUMBER VALUE YIELDS

By

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The purpose of a logging and milling time-cost study is to find, through a comparison of production costs and lumber value yields, the margins available for stumpage and profit or loss by log and tree sizes.

This note, which is the third in a series of four technical notes describing time-cost studies in the Southern Appalachians, is concerned only with the calculation of lumber value yields. For the latter purpose, analyses were made of lumber grade-yields of logs and trees, lumber thicknesses, and overrun or underrun; and these data were related to ceiling lumber prices.

Eighteen hardwood species from two areas near Asheville, North Carolina, were studied. Ash, chestnut, black gum, hickory, red maple, black oak, chestnut oak, northern red oak, scarlet oak, white oak, and yellow-poplar came predominantly from the Bent Creek Experimental Forest, 16 miles from Asheville.^{1/} Basswood, beech, black birch, buck-eye, black cherry, cucumber magnolia, and sugar maple came almost

^{1/} Nearly the whole cutting area was included within various oak types. Elevations ranged from 2800 to 3750 feet; slopes varied up to 100 percent, but averaged 30 percent. Sawtimber volume per acre of operable area averaged 5.1 M bd. ft. before cutting. By using 18 inches as a rough diameter cutting limit, 74 percent of the total merchantable volume was removed.

exclusively from the Big Ivy Working Circle of the Pisgah National Forest, 24 miles from Asheville.^{2/}

Logs were taken to a stationary circular mill sawing about 10 M bd. ft. of lumber per day, where at least an average effort was made to obtain higher grades of lumber, overrun, and thicker dimensions. The mill was a No. 7 Wheeland with a gang edger (3 saws), a trimmer (2 saws), a swing cut-off saw, and a small skidder for hauling logs from the yard to the deck. The power unit was a new Murphy Diesel engine of 150 h.p.^{3/}

Lumber grade-yields, thicknesses, and overrun or underrun were recorded for 1,225 hardwood logs. The sample of eighteen species was distributed as follows: ash, 5 logs; basswood, 128; beech, 11; black birch, 46; buckeye, 17; black cherry, 4; cucumber magnolia, 31; chestnut, 49; black gum, 32; hickory, 36; red maple, 74; sugar maple, 201; black oak, 51; chestnut oak, 180; northern red oak, 90; scarlet oak, 69; white oak, 95; and yellow-poplar, 106.

All parts of the milling study, i.e., lumber grade-yields, thicknesses, overrun or underrun, and lumber value yields, were related to log grades and to trees composed of logs of specified grades. The log grading rules used are shown in table 1.

The reconstruction of data for different log sizes into data for different tree sizes was accomplished through the use of tree-log relationships determined on the Bent Creek Experimental Forest. These relationships were also used for species from the Big Ivy Working Circle, but although some error may have been introduced thereby, it is probably not serious.

^{2/} The Big Ivy cutting area was predominantly of cove hardwood types, but contained large proportions of oak-chestnut and northern hardwood types. Elevations and slopes were similar to those encountered on the Bent Creek Experimental Forest. Sawtimber volume per acre of operable area was 9.7 M bd. ft., of which 6.6 M bd. ft. was marked for cutting.

^{3/} The crew required to operate the mill numbered seven men --- a sawyer, dog setter edgerman, trimmerman, cut-off sawyer, lumber sorter, and log yardman. Two other men were required to pile lumber in the yard.

Table 1.--Hardwood Log Grading Rules

Log Grade	Minimum Diameter (Inches)	Minimum Length (Feet)	Maximum Defect		Minimum Surface Requirements on Each of 3 Visible Faces
			Permitted Including Sweep, Rot, Shakes, etc.	Percent	
Select	16	10		10	Clear.
	24	10		10	3/4 clear in one clear-cutting.
1	14	10		25	5/6 clear in one clear-cutting.
	16	10		25	5/6 clear in not over 2 clear-cuttings, each not less than 5 feet long.
2	12	10		35	2/3 clear in not over 2 clear-cuttings, each not less than 3 feet long.
	16	10		40	2/3 clear in not over 3 clear-cuttings, each not less than 3 feet long.
3	10	10		50	No surface requirements.

Lumber Grade-Yield

Table 2 shows the percentage of lumber occurring in each lumber grade from sawed logs of various diameters, species, and log grades. Lumber was graded by standard hardwood grading rules.^{4/} For each species, the attempt was made to separate all log grades -- Select, 1, 2, and 3. However, samples were too small in some cases to warrant log grade divisions, as in the case of ash and beech. For most species, too, it was found advisable to combine Select and No. 1 logs. This was a consequence of the scarcity of Select logs. It is not a reflection of lack of utility in maintaining a separate grade of logs which is superior to the No. 1 grade. Chestnut log grades were not differentiated because substantial differences in their lumber yields could not be discerned.

The method used was to construct grade-yield curves over log diameter for species with large log samples. These large samples provided a general pattern which was used to guide the curves for other species. In this manner, an accuracy could be imparted to small samples which far exceeded the accuracy exhibited when the samples were isolated from the main pattern.

Table 3 is similar to table 2 except that the grade-yield percentages apply to tree diameter classes rather than log diameter classes. In constructing table 3, an effort was made to segregate log grades wherever possible. Thus, in the category "Red Maple - Grade 2 Logs," grade-yields were determined on the supposition that all logs cut were No. 2 logs, but that the size and number of logs used in the calculation of grade-yield were those actually determined from the tree-log relationships measured on the Bent Creek Experimental Forest. The interpretation of table 3 is exemplified by the following illustration of a red maple tree 24 inches in diameter at breast height containing only No. 2 logs -- such a tree is likely to yield 5 percent F and S lumber, 7 percent Select lumber, 34 percent No. 1 Common, 33 percent No. 2 Common, 16 percent No. 3A Common, and 5 percent No. 3B Common.

^{4/} An experienced lumber grader was furnished by the sawmill owner for the grade-yield study.

Table 2.--Percentage of lumber in different lumber grades by species, log grade, and log diameter class

Log Diameter Class	Ash					Basswood					Basswood					Basswood							
	All Log Grades					Select & Grade 1 Logs					Grade 2 Logs					Grade 3 Logs							
	F&S	Sel.	1C	2C	3C	F&S	Sel.	1C	2C	3AC	3BC	F&S	Sel.	1C	2C	3AC	3BC	F&S	Sel.	1C	2C	3AC	3BC
10			44	41	15															14	59	26	1
12		5	40	40	15															21	56	17	5
14		5	37	40	14															25	54	12	6
16	4	6	34	40	14	13	20	37	19	11										28	53	10	5
18		10	31	40	14	20	21	39	17	3										31	52	8	5
20		12	29	40	14	21	21	39	16	3										32	51	7	5
22		14	28	39	14	22	21	39	15	3										34	50	7	4
24		15	27	39	14	23	22	38	14	3										35	50	6	4
26		16	27	39	13	24	22	37	13	3	1									36	49	6	4
28	17	6	27	39	11	25	22	37	12	3	1									37	48	7	3

Log Diameter Class	Beech						Black Birch						Bl Birch-Gr 3 Logs				Buckeye							
	Grade 3 Logs						Grade 2 Logs										Select & Grade 1 Logs							
	F&S	Sel.	1C	2C	3AC	3BC	F&S	Sel.	1C	2C	3AC	3BC	2C	3AC	3BC	Wormy	Sound	F&S	Sel.	1C	2C	3AC	3BC	
10			24	33	29	14							14	44	38	4								
12			29	33	26	12							16	43	32	9								
14			32	33	24	10							18	42	26	14								
16			32	32	22	9							20	40	25	15								
18	1	3	31	32	20	8	2	4	40	24	20	11	20	38	26	14								
20	2	5	30	33	19	7	5	5	38	25	18	9	22	37	26	14								
22	7	4	30	32	18	7	7	6	38	25	17	8	23	36	26	15								
24	9	4	29	32	18	7	8	7	38	25	16	7	23	35	26	15								
26	10	4	29	32	18	7	10	7	39	25	15	6	24											
28	11	4	29	32	18	6					14	5												

Table 2 (Continued).--Percentage of lumber in different lumber grades by species, log grade, and log diameter class

Log Diameter Class	Buckeye				Black Cherry				Chestnut-All Log Grades				Cucumber								
	Grade 2 Logs				Grade 2 Logs				Log Grades				Grade 1 Logs								
	Sel.	1C	2C	3AC	3BC	Sel.	1C	2C	3AC	3BC	2C	3AC	3BC	Sound	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC
10											12	19	2	14	53						
12											17	18	2	15	48						
14					1						20	18	2	16	44						
16	3	4	28	53	12	2	20	47	16	15	23	17	2	18	40		53	41	6		
18	4	4	28	54	11	3	20	47	16	14	26	17	2	19	36		9	37	5		
20	5	5	29	54	9	3	20	47	16	14	28	17	2	21	32		10	35	5		
22	5	5	30	54	8	3	20	47	16	14	30	17	2	22	29		10	34	5		
24	5	5	31	54	7	3	20	47	16	13	32	17	2	24	25		11	42	4		
26	5	5	32	53	7	3	20	47	16	13	34	17	2	25	22		9	33	3		
28	5	5	33	53	6	4	21	47	16	12	36	17	2	26	19		9	32	2		
30						4					38	17	2	26	17						
32											40	17	2	26	15						
34											41	17	2	27	13						
36											42	17	2	27	12						
38											43	17	2	27	11						

Log Diameter Class	Cucumber					Cucumber					Black Gum					Bl Gum-Gr 2 Logs				Bl Gum-Grade 3 Logs					
	Grade 2 Logs					Grade 3 Logs					Grade 1 Logs					1C	2C	3AC	3BC	1C	2C	3AC	3BC	Tim- bers	
	1C	2C	3AC	3BC		1C	2C	3AC	3BC	Sel.	1C	2C	3AC												
10						69	31												7	58	25	10			
12	32	52	9	7		7	24	5											15	54	20	10			1
14	33	52	9	6		10	21	7											21	50	18	7			4
16	33	52	9	6		12	20	8											23	51	14	6			6
18	33	52	9	6		12	19	8											23	52	13	4			8
20	34	52	9	5		12	18	8											23	55	11	3			8
22	34	53	9	4		12	17	8											23	57	11	2			7
24	34	53	9	4		12	17	7											23	59	10	2			6
26	34	54	8	4		12	17	6											23	60	10	2			5

Table 2 (Continued). --Percentage of lumber in different lumber grades by species, log grade, and log diameter class

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Table 2 (Continued).--Percentage of lumber in different lumber grades by species, log grade, and log diameter class

Log Diameter Class	Black Oak-Sel. & Grade 1 Logs							Black Oak - Grade 2 Logs							Black Oak - Grade 3 Logs								
	F&S	Sel.	1C	2C	3AC	3BC	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers
10																							
12																							
14																							
16																							
18																							
20																							
22																							
24																							
26																							
28																							
30																							
32																							

Log Diameter Class	Chestnut Oak - Select Logs							Chestnut Oak - Grade 1 Logs							Chestnut Oak - Grade 2 Logs								
	F&S	Sel.	1C	2C	3AC	3BC	Sound Wormy	F&S	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers
12																							
14																							
16																							
18																							
20																							
22																							
24																							
26																							
28																							
30																							
32																							

Table 2 (Continued). ---Percentage of lumber in different lumber grades by species, log grade, and log diameter class.

Log Diameter Class	Chestnut Oak - Grade 3 Logs					N. Red Oak - Select Logs					N. Red Oak - Grade 1 Logs				
	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Tim- bers	Tim- bers
10	1	19	18	18	19	25		22	9	41	10	8	3	7	
12	2	19	18	18	20	23		26	9	37	10	8	3	7	
14	4	18	17	19	20	22		30	10	33	10	8	3	6	
16	6	18	17	19	20	18		34	10	30	10	8	3	5	
18	1	19	17	18	21	17		38	10	26	10	8	3	5	
20	2	19	17	18	21	15		41	10	23	10	8	3	5	
22	3	19	17	18	21	14		44	11	20	10	8	3	4	
24	3	19	17	18	21	13		47	11	19	10	6	3	4	
26	3	19	17	18	21	11		49	11	18	10	5	3	4	
28	4	19	17	18	22			50	12	18	9	5	3	3	
30								51	13	18	9	3	3	3	
32								52	13	18	9	3	2	3	
34								52	13	18	9	3	2	3	
36															
38															
40															

Log Diameter Class	N. Red Oak - Grade 2 Logs					N. Red Oak - Grade 3 Logs					Scarlet Oak - Grade 2 Logs				
	F&S	Sel.	1C	2C	3AC	3BC	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers
10								1	1	22	32	3	6	7	28
12								1	1	22	32	5	5	7	27
14								2	1	23	32	6	5	6	26
16	4	3	35	23	15	9	11	2	1	23	32	6	5	6	25
18	7	3	34	22	15	9	10	3	1	24	33	5	5	6	24
20	10	3	33	22	14	8	10	3	1	24	33	5	5	6	23
22	13	3	33	20	14	8	9	3	1	24	34	5	5	6	22
24	15	4	31	20	14	7	9	4	1	25	34	4	5	6	21
26	17	4	31	20	13	7	8	4	1	26	34	4	5	6	20
28	19	4	31	19	13	6	8	5	1	26	35	3	5	6	19
30	20	4	31	19	12	6	8	6	1	27	35	3	4	6	18
32	21	5	31	18	11	6	8								
34	23	5	31	17	10	7	7								

Table 2 (Continued).--Percentage of lumber in different lumber grades by species, log grade, and log diameter class

Log Diameter Class	Scarlet Oak - Grade 3 Logs					Wh. Oak-Sel. & Grade 1 Logs					White Oak - Grade 2 Logs				
	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers
10		7	39	23	29	2									
12		8	39	25	24	2									
14		8	39	26	19	3									
16	2	8	38	27	18	3									
18	1	9	38	28	17	3									
20	1	9	38	28	18	3									
22	2	10	38	28	18	2									
24	2	10	38	28	18	2									
26															
28															
30															
32															

Log Diameter Class	White Oak - Grade 3 Logs					Yellow-poplar Select Logs					Yellow-poplar Grade 1 Logs				
	F&S	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers	F&S	Sap	1C	2C	3AC	3BC	3BC
10					21	20	15	18							
12					3	18	15	15							
14					8	17	15	14							
16					11	16	14	13							
18					13	16	14	12							
20					14	16	14	11							
22					14	16	14	11							
24					15	16	14	11							
26					16	15	14	11							
28					16	15	14	11							
30					15	15	14	11							
32					15	15	14	11							
34					15	15	14	11							
36					15	15	14	11							
38					15	15	14	11							
40					15	15	14	11							
42					15	15	14	11							
44					15	15	14	11							

Table 2 (Continued).--Percentage of lumber in different lumber grades by species, log grade and log diameter class

Log Diameter Class	Yellow-poplar Grade 2 Logs						Yellow-poplar Grade 3 Logs					
	F&S	Sap	1C	2C	3AC	3BC	Sap	1C	2C	3AC	3BC	
10								13	65	12	10	
12			29	61	10			14	64	12	10	
14			30	60	10			14	64	12	10	
16		1	31	58	10			15	64	11	10	
18		2	31	57	10		2	13	64	11	10	
20		2	33	55	10		3	13	64	11	10	
22		2	33	54	10		3	13	64	11	9	
24	1	2	35	52	10		4	13	63	11	9	
26	1	2	36	51	9	1	4	13	63	11	9	
28	2	2	36	50	9	1	5	13	63	11	8	
30	2	2	37	49	9	1	5	13	63	10	8	
32	3	2	38	47	9	1	6	13	64	9	7	
34	3	2	39	46	8	2						
36	3	2	40	45	8	2						

Table 3.--Percentage of lumber in different lumber grades by species, log grade, and tree diameter class

Tree DBH Class	Ash			Basswood			Basswood			Basswood					
	All Log Grades			Select & Grade 1 Logs			Grade 2 Logs			Grade 3 Logs					
	F&S	1C	2C	3C	F&S	1C	2C	3C	3BC	F&S	1C	2C	3C	3BC	
14		4	41	40	15										
16	2	4	39	40	15						1	19	57	19	4
18	4	5	37	40	14						1	21	56	17	4
20	6	5	35	40	14						1	24	55	14	5
22	8	5	33	40	14						2	26	54	12	5
24	10	5	31	40	14						3	29	53	9	5
26	12	5	29	40	14						3	31	52	8	5
28	14	5	27	40	14						3	32	51	8	5
30	15	5	28	39	13						3	33	50	7	5
32	16	5	28	39	12						3	34	50	6	5
											3	35	50	5	5

[illegible]

Table 3 (Continued). --Percentage of lumber in different lumber grades by species, log grade, and tree diameter class

Tree DBH Class	Buckeye						Black Cherry						Chestnut-All Log Grades						Cucumber											
	Grade 2 Logs						Grade 2 Logs						Log Grades						Grade 1 Logs											
	Sel.			3BC			Sel.			3BC			2C			3AC			3BC			Sel.			3AC			3BC		
	1C	2C	3C	1C	2C	3C	1C	2C	3C	1C	2C	3C	1C	2C	3C	1C	2C	3C	1C	2C	3C	1C	2C	3C	1C	2C	3C			
14	1	27	53	17	2	1	20	47	17	15	16	17	2	15	50															
16	2	27	53	15	3	2	20	47	16	15	17	17	2	16	48															
18	3	28	53	13	3	3	20	47	16	14	20	18	2	16	46															
20	4	28	53	12	3	4	20	47	16	13	22	18	2	17	43															
22	5	28	54	10	3	4	20	47	16	13	24	18	2	18	40															
24	5	29	54	9	3	4	21	47	16	12	26	18	2	19	37															
26	5	30	54	8	3	4	22	47	16	11	28	17	2	20	34															
28	5	31	54	7	3	4	22	47	16	11	30	17	2	21	32															
30	5	32	54	6	3	4	23	47	16	10	33	17	2	22	29															
32																														
34																														
36																														
38																														
40																														
42																														

Tree DBH Class	Cucumber						Black Gum						Bl. Gum-Gr 2 Logs						Black Gum-Gr. 3 Logs					
	Grade 2 Logs			Grade 3 Logs			Grade 1 Logs			Grade 1 Logs			Grade 1 Logs			Grade 1 Logs			Grade 1 Logs			Grade 1 Logs		
	1C	2C	3AC	3BC	1C	2C	3AC	3BC	1C	2C	3AC	3BC	1C	2C	3AC	3BC	Tim- bers	Tim- bers	1C	2C	3AC	3BC	Tim- bers	Tim- bers
14	32	52	9	7	5	65	26	4																
16	33	52	9	6	7	64	24	5																
18	33	52	9	6	9	62	23	6																
20	33	52	9	6	10	61	22	7																
22	33	52	9	6	11	60	21	8																
24	34	52	9	5	11	60	21	8																
26	34	53	9	4	12	60	21	7																
28	34	54	9	3	12	61	20	7																
30	34	55	9	2	13	62	18	7																

Table 3 (Continued). --Percentage of lumber in different lumber grades by species, log grade and tree diameter class

Tree DBH Class	Hickory-Grade 2 Logs				Hickory-Grade 3 Logs				Red Maple Select & Grade 1 Logs				Red Maple Grade 2 Logs					
	1C	2C	3AC	Tin- bers	1C	2C	3AC	Tin- bers	F&S	Sel.	1C	2C	3AC	F&S	Sel.	1C	2C	3AC
14					1	54	4	37						1	5	35	23	1
16	16	45	5	21	3	51	4	38	17	9	44	18	12	2	6	34	22	2
18	17	42	5	33	4	50	4	39	20	9	44	17	10	3	6	34	20	3
20	17	40	4	26	5	49	4	39	22	9	43	17	19	4	7	34	18	4
22	18	40	4	36	6	47	3	41	24	9	43	17	16	5	7	34	16	5
24	19	39	4	36	7	44	3	43	25	9	43	17	16	6	7	34	15	6
26	19	35	3	36	8	40	3	46	26	9	43	17	15	7	7	34	13	7
28	20	31	3	41	9	39	2	48	27	9	43	17	14	8	7	34	11	7
30	20	30	3	44	10	36	2	50	28	9	43	17	13	9	7	34	10	7
32	20	29	2	46	11	35	2	50	29	9	44	16	12	10	7	33	10	7
34			1	48					30	9	44	15	2	11	6	33	9	7
36			1						30	9	44	15	2	11		34		

[illegible]

Table 3 (Continued).--Percentage of lumber in different lumber grades by species, log grade, and tree diameter class

Tree DBH Class	Bl Oak-Select & Grade 1 Logs					Black Oak - Grade 2 Logs					Black Oak - Grade 3 Logs				
	F&S	Sel.	1C	2C	3AC	3BC	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Tim- bers	
14											8	28	30	23	12
16											10	28	28	23	11
18	4	7	33	24	22	8	2				1	11	29	26	10
20	5	6	33	23	22	8	3				1	12	30	24	10
22	7	6	34	22	21	6	4				1	13	30	22	9
24	10	6	35	21	19	5	4				1	14	30	20	8
26	12	6	35	20	18	5	4				2	15	31	18	8
28	13	6	36	19	17	5	4				2	16	31	17	8
30	15	6	37	18	16	4	4				3	17	32	16	7
32	16	6	38	17	14	4	5				3	18	32	15	7
34	17	5	39	17	12	4	6				3	18	32	15	7
36	18	5	40	17	10	4	6				3	18	32	15	7

Tree DBH Class	Chestnut Oak - Select Logs					Chestnut Oak - Grade 1 Logs					Chestnut Oak - Grade 2 Logs				
	F&S	Sel.	1C	2C	3AC	3BC	Sound	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Sound
16															
18															
20	4	8	22	5	5	2	32	22	1	2	18	13	10	13	31
22	4	8	23	5	5	2	32	21	2	2	18	13	10	13	31
24	5	8	24	5	5	2	32	19	2	2	18	13	10	13	31
26	5	8	26	6	4	2	32	17	3	3	19	14	10	11	31
28	5	8	27	6	4	2	32	16	4	3	19	14	10	11	31
30	6	8	29	7	3	2	31	14	4	3	19	15	10	10	31
32	6	8	30	7	2	2	32	13	4	3	19	16	10	9	31
34	7	8	31	7	2	2	33	10	5	3	19	16	11	7	31
36	8	8	32	7	2	2	33	8	5	3	20	16	10	7	31

Tree DBH Class	Chestnut Oak - Select Logs					Chestnut Oak - Grade 1 Logs					Chestnut Oak - Grade 2 Logs				
	F&S	Sel.	1C	2C	3AC	3BC	Sound	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Sound
16															
18															
20															
22															
24															
26															
28															
30															
32															
34															
36															

Table 3 (Continued). --Percentage of lumber in different lumber grades by species, log grade, and tree diameter class

Tree DBH Class	Chestnut Oak - Grade 3 Logs						N. Red Oak - Select Logs						N. Red Oak - Grade 1 Logs					
	Sel.			3AC			F&S Sel.			3AC			F&S Sel.			3AC		
	1C	2C	3BC	3BC	Wormy	Tim- bers	1C	2C	3BC	3BC	Wormy	Tim- bers	1C	2C	3BC	3BC	Wormy	Tim- bers
14	2	19	18	18	20	23												
16	3	19	18	18	20	22												
18	4	18	18	18	20	22												
20	5	19	17	18	20	21												
22	1	6	19	17	21	18	24	9	39	10	8	7	16	10	37	12	11	7
24	2	6	19	17	21	17	26	9	37	10	8	3	18	9	36	12	11	7
26	2	6	19	17	22	16	28	9	35	10	8	3	20	9	35	12	11	6
28	2	6	19	17	22	15	30	10	33	10	8	3	22	9	33	12	11	6
30	3	7	19	17	23	13	32	10	31	10	8	3	23	9	32	12	11	6
32	3	7	19	17	24	12	35	10	29	10	8	3	25	9	30	12	11	6
34							37	10	27	10	8	3	27	9	27	12	11	6
36							38	11	27	9	8	3	30	9	26	12	11	6
38							39	11	27	9	7	3	32	9	25	11	11	6
40							40	12	27	9	6	3	33	10	24	11	10	6
42							41	12	27	9	5	3	34	10	23	11	10	6
44							42	12	27	9	4	3	36	10	22	10	10	6
							43	12	27	9	4	3						

Tree DBH Class	N. Red Oak - Grade 2 Logs						N. Red Oak - Grade 3 Logs						Scarlet Oak - Grade 2 Logs					
	Sel.			3AC			F&S Sel.			3AC			Sel.			3AC		
	1C	2C	3BC	3BC	Wormy	Tim- bers	1C	2C	3BC	3BC	Wormy	Tim- bers	1C	2C	3BC	3BC	Wormy	Tim- bers
14	1	1	10	10	11		1	22	32	5	5	27	1	27	24	9	33	3
16	2	2	10	10	11		1	23	32	5	5	26	2	29	25	10	27	3
18	3	3	10	10	11		2	23	32	5	5	26	4	30	26	10	23	4
20	5	3	9	9	10		2	23	32	5	4	26	6	30	26	11	19	4
22	6	3	8	8	10		2	24	33	5	4	25	8	31	26	11	16	5
24	8	3	7	7	10		3	24	33	5	4	24	9	32	26	11	14	5
26	10	3	6	6	10		4	24	33	5	4	23	9	33	26	11	13	5
28	12	3	5	5	9		4	24	33	4	5	23	10	34	26	11	11	5
30	13	3	4	4	9		4	25	34	3	5	22	11	35	25	11	10	5
32	14	4	3	3	9		5	25	34	2	5	22						
34	15	4	2	2	8		5	26	34	1	5	22						
36	16	4	1	1	8													
38																		

Table 3 (Continued) ---Percentage of lumber in different lumber grades by species, log grade, and tree diameter class

Tree DBH Class	Scarlet Oak-Grade 3 Logs							White Oak-Select & Gr. 1 Logs							White Oak - Grade 2 Logs							
	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Tim- bers	F&S	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers
14		8	39	24	26	2	1															
16		8	39	24	25	2	2															
18		8	39	25	23	2	2															
20	1	8	38	26	21	3	3															
22	1	9	38	27	19	3	3															
24		10	39	27	18	3	3															
26		10	40	26	18	3	3															
28		10	41	25	18	3	3															
30																						
32																						
34																						
36																						

Tree DBH Class	White Oak - Grade 3 Logs							Yellow-poplar Select Logs							Yellow-poplar Grade 1 Logs						
	F&S	Sel.	1C	2C	3AC	3BC	Sound Wormy	Tim- bers	F&S	Sap	1C	2C	3AC	F&S	Sap	1C	2C	3AC	3BC		
14			2	23	19	25	15	16													
16			3	23	18	25	15	16													
18			6	23	17	24	15	14													
20	1	1	8	23	16	23	15	13													
22	2	1	10	22	14	23	15	13													
24	2	1	11	21	15	22	14	12													
26	2	1	13	20	16	22	14	12													
28	2	1	13	20	16	22	14	12													
30	2	1	14	19	16	22	14	11													
32	2	1	14	20	16	22	14	11													
34	2	1	14	21	16	21	14	11													
36																					
38																					
40																					
42																					
44																					
46																					
48																					

Table 3 (Continued).--Percentage of lumber in different lumber grades by species, log grade, and tree diameter class

Tree DBH Class	Yellow-poplar Grade 2 Logs						Yellow-poplar Grade 3 Logs					
	F&S	Sap	1C	2C	3AC	3BC	Sap	1C	2C	3AC	3BC	
14								14	64	12	10	
16				60	10			14	64	12	10	
18		1	30	58	10			14	65	11	10	
20		1	32	58	9			15	65	10	10	
22		1	33	57	9		1	15	64	10	10	
24		2	33	56	9		2	14	64	10	10	
26		2	33	56	9		3	14	64	10	9	
28		2	34	55	9		3	14	65	9	9	
30	1	2	35	53	9		3	14	65	9	9	
32	1	2	36	53	8		4	14	65	8	9	
34	2	2	37	52	7		4	14	65	8	9	
36	2	2	38	52	6		5	14	65	7	9	
38	2	2	39	51	5	1						
40	3	2	39	50	5	1						

Lumber Thickness

Lumber thickness was determined as a phase of the lumber grade-yield study. Average thicknesses were calculated for each species and lumber grade. Ideally, the calculation should have been made by log sizes also, but this is a refinement which could have been justified only if the log samples had been much larger. Furthermore, the relationship between thickness and size is incidental; it is a consequence of the fact that thicknesses are related to grade yield, while grade yield is related to log size.

Table 4 presents average lumber thickness for each species and lumber grade.

Overrun and Underrun

The mill lumber tally of each log was compared with gross log scale, measured by the Scribner Decimal C log rule, and the difference expressed as a percentage of gross log scale. Using gross log scale as a basis did not eliminate entirely the effect of log defects on mill tally, but inasmuch as log defect is so variable, it was felt that a standardized basis for the expression of overrun and underrun would be preferable.

Curves of overrun and underrun by diameters were constructed for different species and log grades. The large samples were used to determine the general pattern of curves in regard to slope, location, and spacing. Since the pattern was regular, it was possible to locate curves for smaller log samples with some confidence in their reliability.

Table 5 lists the percentage overrun or underrun by log diameter classes for various species and log grades. Table 6 is similar except that percentages apply to tree diameter classes instead of log diameter classes.

Overrun goes up very rapidly when log diameter drops below 14 inches. This appears to be a consequence of the Scribner Decimal C log rule. With increasing diameter, however, overrun changes to underrun. In most species, the break-even point is below 28 inches. As between log grades, considerable differences in overrun appear. The reason is that the better log grades have less defect and the better lumber grades obtained from the logs are sawn into thicker dimensions. The sawing of timbers has the same effect. Chestnut is a special case in that log surface, on which log grade is based, did not indicate thoroughly the soundness of the lumber content; no significant difference in overrun from the various chestnut log grades could be discerned. For all species combined, the average overrun of mill lumber tally over gross log scale was 1.6 percent.

Table 4.--Percentage of lumber tallied in different thicknesses by species and lumber grade

Species	F & S							Select					All Thick- ness	All Thick- ness
	4/4	5/4	6/4	8/4	9/4	10/4	All Thick- ness	4/4	5/4	6/4	8/4	9/4	10/4	
Ask	10	8		67			100	22			78			100
Basswood	15			85			100	24				73	3	100
Beech		100					100		100					100
Black Birch		100					100	28	72					100
Buckeye	100						100	100						100
Black Cherry														
Chestnut														
Cucumber	10			90			100	5			95			100
Black Gum								65			35			100
Hickory														
Sugar maple		29				71	100		32		7		61	100
Red maple	11	89					100		89		11			100
Black oak	37			63			100	23	13		64			100
Chestnut oak				100			100	42			58			100
Northern red oak	8	23		69			100	18	17	6	59			100
Scarlet oak								20	15		65			100
White oak	20			80			100	10			90			100
Yellow-poplar				100			100	6			94			100

Table 4 (Continued).--Percentage of lumber tallied in different thicknesses by species and lumber grade

Species	No. 1 Common						No. 2 Common					
	4/4	5/4	6/4	8/4	9/4	All Thicknesses	4/4	5/4	6/4	8/4	9/4	All Thicknesses
Ash	32			68		100	81			19		100
Basswood	36			2	62	100	71				29	100
Beech	8	92				100	26	74				100
Black Birch	22	78				100	39	61				100
Buckeye	100					100	100					100
Black Cherry	100					100	100					100
Chestnut							75		25			100
Cucumber	22			78		100	64			36		100
Black Gum	22			78		100	37			63		100
Hickory	33			67		100	23			77		100
Sugar Maple	10	52	2	6	2	100	24	74		2		100
Red Maple	8	66		10		100	33	49		18		100
Black Oak	74	2		24		100	88	7		5		100
Chestnut Oak	35	1		64		100	82			18		100
Northern Red Oak	56	17		27		100	81	8		11		100
Scarlet Oak	77	23				100	95	5				100
White Oak	42			58		100	86			14		100
Yellow-poplar	21			79		100	25			75		100

Table 4 (Continued).--Percentage of lumber tallied in different thicknesses by species and lumber grade

Species	No. 3A Common				No. 3B Common				Sound Wormy					
	4/4	5/4	6/4	8/4	All Thicknesses	4/4	5/4	8/4	All Thicknesses	4/4	5/4	6/4	8/4	All Thicknesses
Ash	100				100	100			100					
Basswood	100				100	100			100					
Beech	60	40			100	100			100					
Black Birch	83	17			100	73	27		100					
Buckeye	100				100	100			100					
Black Cherry	100				100	100			100					
Chestnut	95		5		100	100			100	51		49		100
Cucumber	91	4		5	100	100			100					
Black Gum	79	2		19	100	100			100					
Hickory	13			87	100	37		63	100					
Sugar Maple	66	34			100	81	19		100					
Red Maple	64	36			100	86	14		100					
Black Oak	94			6	100	97	3		100	78	22			100
Chestnut Oak	85			15	100	80		20	100	63			37	100
N. Red Oak	81			19	100	100			100	100				100
Scarlet Oak	93			7	100	100			100	100				100
White Oak	95	3		2	100	94		6	100	88			12	100
Yellow-poplar	97	3			100	100			100					

Table 4 (Continued) .--Percentage of lumber tallied in different thicknesses by species and lumber grade

Species	Timbers					All Lumber Grades							
	2x4	2x6	6x6	6x8	All Dimen- sions	4/4	5/4	6/4	8/4	9/4	10/4	Tim- bers	All Dimen- sions
Ash						55	1		44				100
Basswood						51			0.5	46	0.5		100
Beech						32	68						100
Black Birch						47	53						100
Buckeye						100							100
Black Cherry						100							100
Chestnut	13	60	16	11	100	39		14				48	100
Cucumber						43	1		50				100
Black Gum			100		100	43			52				100
Hickory		1	75	24	100	16			54			30	100
Sugar Maple						28	47	1	3	1	20		100
Red Maple						30	54		11		5		100
Black Oak	100				100	85	4		10			1	100
Chestnut Oak		100			100	65			30			5	100
Northern Red Oak			58	42	100	52	12	1	29			6	100
Scarlet Oak			100		100	90	1		3			6	100
White Oak		4	85	11	100	67			23			10	100
Yellow-poplar						27			73				100

Table 5.--Percentage overrun or underrun by log diameter class for various species and log grades^{1/}

Log Diameter Class	Ash			Basswood			Beech		Black Birch		Buckeye		
	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	No. 3 Logs	No. 3 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	
10		22			31.5	25.5			35			18	
12	16	11		25	17	15		24	17		15.5	9.5	
14	8	3	21.5	15	8	8		11.5	6	20	9	3.5	
16	1.5	-3	13	7.5	1	2.5		3	-2	14	4	-1.5	
18	-4	-8	7	1.5	-4.5	-2.5		-3	-8	9	0	-5	
20	-8	-12	2	-3.5	-9	-6		-8.5	-13	6	-3.5	-8	
22	-11	-15	-2	-7	-12	-9		-12	-16	3	-6.5	-11	
24	-13.5	-17.5	-4	-9	-14.5	-11		-15	-19	0.5	-8	-13	
26	-15.5	-19	-6	-11	-17	-12.5				-1.5	-10	-14.5	
28	-17	-20	-8.5	-12.5	-19					-3	-11.5	-16	
30													
32													
34													
36													
38													
40													

^{1/} Difference between mill lumber tally and gross log scale, measured by the Scribner Decimal C log rule, expressed as a percentage.

Table 5 (Continued). --Percentage overrun or underrun by log diameter class for various species and log grades^{1/}

Log Diameter Class	Bl. Cherry		Chestnut All Log Grades	Cucumber			Black Gum			Hickory		
	No. 2 Logs			No. 1 Logs	No. 2 Logs	No. 3 Logs	No. 1 Logs	No. 2 Logs	No. 3 Logs	No. 1 Logs	No. 2 Logs	No. 3 Logs
10			23.5			31			17			27
12	2		16		31	18		13			22	19
14	-3.5		10	28	20	8	12	7	2	20.5	17	14
16	-6		5.5	18	10.5	0	7.5	2.5	-2	16	13	10
18	-9.5		1.5	10	3.5	-7	4	-1	-6	13	9.5	7
20	-12		-2	3.5	-3	-13	1	-4	-9	10	6.5	4
22	-14		-5	-2	-8	-17	-1.5	-6.5	-11	7	4	1.5
24	-16		-7.5	-6.5	-11.5	-20.5	-3.5	-8	-13	5	2	-0.5
26	-18.5		-10.5	-10	-14.5	-23	-5	-10	-15	3	0	-2.5
28	-21		-13							1	-2	-4.5
30			-16									
32			-18.5									
34			-21									
36			-24									
38			-27									
40												

^{1/} Difference between mill lumber tally and gross log scale, measured by the Scribner Decimal C log rule, expressed as a percentage of gross log scale.

Table 5 (Continued).--Percentage overrun or underrun by log diameter class for various species and log grades

Log Diameter Class	Red Maple			Sugar Maple			Black Oak			Chestnut Oak		
	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs
10		8	10		26	28		16	26		14.5	14.5
12		4	4		15	15		5.5	10		9	9
14		0	0		7	6		-1	1		5	4
16	16	0	-4	31	0.5	-1.5	11	-6	-6	16	1	0
18	11	-3	-7	21	-4	-7	4	-10	-10	11	3.5	-3.5
20	7.5	-6	-10	14.5	-8	-11	-0.5	-13	-14	7	1	-6.5
22	4.5	-8	-12	9	-10.5	-14.5	-5	-15	-16.5	3.5	-2	-9
24	2	-10	-14	5	-13	-17	-8.5	-16.5	-19	1	-7	-11
26	0	-11.5	-15.5	1.5	-14	-21	-11.5	-18	-20.5	-1.5	-8.5	-13
28	-2	-12.5	-16.5	-1.5			-13		-21.5	-3.5	-10	-15
30	-4.5	-13.5	-17.5	-3			-14			-5		
32	-5.5	-14.5	-18.5				-15.5			-7		
34							-17					
36												
38												
40												

^{1/} Difference between mill lumber tally and gross log scale, measured by the Scribner Decimal C log rule, expressed as a percentage of gross log scale.

Table 5 (Continued).--Percentage overrun or underrun by log diameter class for various species and log grades^{1/}

Log Diameter Class	Northern Red Oak			Scarlet Oak		White Oak			Yellow-Poplar		
	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs
10			18		23			32.5			
12		16.5	10.5	18	10		22.5	14		33	24
14		10	5	9	2	24.5	10.5	4	29	21.5	14
16	26	5.5	0.5	3	-4	15	3	-2	20	13.5	7
18	20	1.5	-3	-2	-8	8	-1.5	-7	13.5	8	2
20	15	-1.5	-6	-5.5	-12	4	-5.5	-11	8	3	-3
22	12	-4	-8	-7.5	-14	1	-8	-14	3.5	-1	-6
24	9	-6	-10	-9	-15	-1.5	-10.5	-15.5	0	-4.5	-8.5
26	7	-7.5	-11.5	-10		-3	-12	-17	-2	-6	-10
28	5	-8.5	-12.5	-11		-4.5	-13.5	-19	-4	-7.5	-11.5
30	3.5	-9.5	-14			-6	-15	-20.5	-5	-9	-12.5
32	2.5	-11							-6	-10	-14
34	1.5	-12							-7	-11	
36	0								-8.5	-12	
38	-1								-10		
40	-2								-12		
42	-3								-14		
44									-16		

^{1/} Difference between mill lumber tally and gross log scale, measured by the Scribner Decimal C log rule, expressed as a percentage of gross log scale.

Table 6.--Percentage overrun or underrun by tree diameter class for various species and log grades^{1/}

Tree DBH Class	Ash		Basswood			Beech		Black Birch		Buckeye		
	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	No. 2 Logs	No. 3 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs
14	17	16			24	22	19.5	24	24	21	16	12
16	12	10.5	20.5	19	17	18.5	15	18	17	17.5	12	8
18	8	6	17	15	12	15	11	12	10.5	15	9	4.5
20	4.5	2	14	11	7	12	8	8.5	5.5	12	6	1.5
22	2	-1.5	12	8	3	9.5	5	4.5	0.5	12	3	-1
24	-1	-5	10	5	-1	7	2	1	-3.5	9.5	1	-3.5
26	-3.5	-8.5	8	2	-5	4.5	-1	-2	-7	7.5	-1	-6
28	-6	-12	6	-1	-8.5	2	-3.5	-5	-11	5.5	-3	-8
30	-8.5	-15.5	4.5	-3	-12	0	-6			4	-5	-9.5
32	-11	-19	3	-6	-15.5					2	-7	-11

Tree DBH Class	Black Cherry No. 2 Logs	Chest- nut All Log Grades	Cucumber			Black Gum			Hickory			Red Maple		
			No. 1 Logs	No. 2 Logs	No. 3 Logs	No. 1 Logs	No. 2 Logs	No. 3 Logs	No. 1 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs
14	3	22.5	28	30	23.5	12	13.5	12	22	19.5	21	17	10	8
16	0	18	23	24	17	9.5	10	8	19.5	16.5	17.5	14	7	3
18	-2	14	18	19	11	7.5	6.5	4	17	14	15	11.5	4	0
20	-4	9	14.5	15	6	6	4	1	14.5	12	12.5	9	1.5	-2
22	-6	5.5	11.5	11	1.5	4.5	2	-2	13	10	10	7.5	-1	-4
24	-7.5	3	8.5	7	-3	3	0	-4	11	8	8	6	-2	-6
26	-9	0	6	3	-6.5	2	-2	-6.5	9.5	6.5	6	4.5	-4	-7
28	-10.5	-2	3	0	-10.5	1	-4	-9	8	3	4.5	3	-5	-8.5
30	-12	-4	3	-3.5	-14		-6	-11	7	3.5	1.5	2	-6.5	-10
32	-13	-6										0.5	-7.5	-11
34		-7.5										-0.5	-8.5	-12
36		-9											-9.5	-13
38		-10.5												
40		-12												
42		-13.5												

^{1/} Difference between mill lumber tally and gross log scale, measured by the Scribner Decimal C log rule, expressed as a percentage of gross log scale.

Table 6 (Continued).--Percentage overrun or underrun by tree diameter class for various species and log grades^{1/}

Tree DBH Class	Sugar Maple			Black Oak			Chestnut Oak			N. Red Oak		
	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs
14			19		15	14		17	11.5		18	13.5
16	29	21	13	12	10	7.5	17	13	6.5	26	14	9.5
18	25	16	8	8	5	3	14	9	2	22.5	10.5	6
20	21.5	12.5	4	4	1.5	-1	11	6	-1	20	8	3
22	17	9	0.5	1.5	-2	-5	9	3	-4	17.5	5	0.5
24	15	6	-3	-0.5	-4.5	-8	7	1	-7	15	3	-1.5
26	13	3	-6	-2.5	-7	-10	5	-1	-9	13.5	1.5	-3
28	11	0.5	-8.5	-4	-9	-12	4	-3	-11	12	0	-4.5
30	8.5	-2	-11.5	-6	-10.5	-14	2	-4.5	-13	10	-1.5	-6
32	6.5			-7	-12	-16	1	-6	-15	8.5	-3	-7.5
34				-8.5			0			7	-4	-9
36				-10			-1			6	-5.5	
38										4.5	-6.5	
40										3		
42										1.5		
44										0		

^{1/} Difference between mill lumber tally, and gross log scale, measured by the Scribner Decimal C log rule, expressed as a percentage of gross log scale.

Table 6 (Continued). --Percentage overrun or underrun by tree diameter class for various species and log grades^{1/}

Tree DBH Class	Scarlet Oak		White Oak		Yellow-poplar			
	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs	Select & No. 1 Logs	No. 2 Logs	No. 3 Logs
14	19.5	15		26	22.5		32.5	28
16	14	8.5	25	19	15	29.5	26	22
18	9	3.5	20	13.5	9	24	21	17
20	5.5	0	16	8.5	4	20	17	12.5
22	2.5	-3.5	12.5	4.5	0	16.5	13	
24	0	-6	9.5	1	-3.5	13.5	10	9
26	-1.5	-8	7	-2	-7	11	7.5	6
28	-3.5	-10	5	-5	-9.5	9	5.5	3.5
30	-5		3	-7	-12	7	3.5	1
32	-6		1.5	-8.5	-13.5	5	1.5	-1
34			0	-10.5	-15	3	0	-3
36			-1.5			1.5	-1.5	-5
38						0	-3.5	-6.5
40						-1	-5	
42						-2.5		
44						-4		
46						-6		
48						-8		

^{1/}Difference between mill lumber tally and gross log scale, measured by the Scribner Decimal log rule, expressed as a percentage of gross log scale.

Lumber Value Yields

The prices used as a basis for the calculation of value yields for green lumber were the OPA ceilings in force on May 7, 1946.^{5/} The first calculation was to weight ceiling prices for various thicknesses, species, and lumber grades by the percentage of lumber occurring in each thickness (table 7). Next, the prices in table 7 were weighted with the grade-yield percentages from tables 2 and 3; and new tables were constructed showing the average value per M bd. ft. for each species and log diameter class (table 8) and the average value per M bd. ft. for each species and tree diameter class (table 9).

The values shown in tables 8 and 9 have not been adjusted on curves to regularize the value differences between diameter classes. Nevertheless, the values do show a definite trend of increase with increase in diameter. This is true both for log diameter and tree diameter classes.

That there is a real advantage in distinguishing between log grades becomes readily apparent in tables 8 and 9. In most cases, the differences in value yields between the several log grades for a particular species are quite substantial. It is interesting to note, too, that the log grading rules used have resulted in a regular spacing of lumber value yields between log grades. There are only a few exceptions, such as black gum and hickory, to the pattern of substantial differences in value between log grades, but it is doubtful that any improvement in this respect would result from changing the log grading rules. Select logs were numerous enough in this study to warrant separation from No. 1 logs for only three species -- chestnut oak, northern red oak, and yellow poplar -- and in the case of the first two species, the separation was well justified.

A final calculation was made to reduce the lumber values in tables 8 and 9, which were on a mill tally basis, to a gross log scale basis (tables 10 and 11).^{6/} It will be noted in tables 10 and 11 that the trend of value yields is to decrease as diameter increases. This need not be confusing since the comparisons are on a log scale basis, not mill tally, while overrun diminishes or underrun increases as log and tree diameters increase.

^{5/} Green lumber price ceilings were determined, according to OPA regulations, by reducing the air-dry ceiling prices 10 percent.

^{6/} Tables 5 and 6, presenting percentage overrun or underrun of lumber mill tally over gross log scale, provided the basis for converting values from a mill tally basis to a gross log volume basis. In the case of overrun, the mill tally value per M bd. ft. was divided by $1 + p$ where p was the percentage of overrun. In the case of underrun, the mill tally value per M bd. ft. was divided by $1 - p$.

Table 7.--Average ceiling prices of green lumber per M bd. ft., mill tally, by species and lumber grade^{1/}

Species	Lumber Grade								
	F & S	Select	No. 1C	No. 2C	No. 3AC	No. 3BC	No. 3C2/ No. 3C	Sound Wormy	Timbers
Ash	\$ 92.09	\$ 66.75	\$ 64.77	\$ 40.14			\$ 25.65		
Basswood	97.04	71.57	69.76	44.71			25.65		
Beech	74.25	55.28	55.28	40.03	\$ 30.96	\$ 20.70			
Black Birch	117.00	72.11	72.11	47.73	30.76	24.28		\$ 47.75	
Buckeye	66.15	46.35	46.35	36.45			25.65		
Black Cherry		74.25	74.25	48.60			28.80		
Chestnut				30.60			24.77	48.78	\$ 28.52
Cucumber	107.73	73.60	71.38	47.11			25.73		35.10
Black Gum		51.05	51.05	36.87			23.13		39.05
Hickory			52.99	37.53			27.34		
Red Maple	91.70	68.58	68.58	44.24	29.98	25.78			
Sugar Maple	128.27	87.41	79.48	43.88	30.91	21.00			
Black Oak	94.97	66.91	63.23	43.43	30.60	20.70		43.55	38.70
Chestnut Oak	130.50	70.97	70.97	44.54	30.60	20.70		47.08	39.46
N. Red Oak	97.57	66.92	64.07	44.06	30.60	20.70		42.75	38.70
Scarlet Oak		67.07	62.13	42.88	30.60	20.70		44.15	38.90
White Oak	126.81	74.08	70.62	44.14	30.60	20.70			
Yellow-poplar	109.80	3/88.21	71.51	49.39			25.67		

^{1/}Green lumber prices based on OPA ceiling prices of May 7, 1946. The price for each thickness was weighted by the percentage of lumber in each thickness.

^{2/}Prices for No. 3 Common are given where No. 3A Common and 3B Common are not differentiated.

^{3/}This price is for sap yellow-poplar rather than select.

Table 8.--Value yields per M bd. ft. of green lumber, mill tally, by species, log grade, and log diameter

Log Diameter Class	Ash			Basswood			Beech		Black Birch		Buckeye		Black Cherry		Chestnut All Log Grades
	All Log Grades	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 3 Logs	Grade 3 Logs	Grade 3 Logs	Grade 3 Logs	Grade 2 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 2 Logs	Grade 2 Logs	Grade 2 Logs	
10	\$48.81		\$54.13	\$43.07	\$38.76		\$31.15				\$35.96		\$47.20		\$32.83
12	49.15		56.13	46.05	39.77		32.44						48.10		31.17
14	50.73	\$64.05		48.86	41.60		34.50			\$39.54					32.43
16	51.45	68.13	56.16	50.71	42.32		35.08			42.64			48.10		32.96
18	52.26	70.02	56.16	51.84	43.71		35.18			44.65			48.56		32.21
20	52.82	70.54	56.17	52.54	44.53		35.35			46.34			48.56		31.65
22	53.61	71.07	56.62	53.25	45.30		36.01			47.65			48.56		31.99
24	53.88	71.61	57.33	53.69	45.50		36.49			48.65			49.01		32.14
26	54.54	71.70	58.05	53.93	46.03					49.34			49.01		32.58
28	55.62	72.22	58.51	54.18						49.64			49.47		32.81
30															32.91
32															32.14
34															32.14
36															32.14
38															32.14

Log Diameter Class	Cucumber			Black Gum			Hickory		Red Maple		
	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 2 Logs
10		\$51.46	\$40.49		\$33.04	\$37.24	\$39.34		\$37.79		\$50.55
12	\$58.69	51.92	42.62	\$41.04	36.86	37.58	39.84		60.72		52.60
14	60.32	51.92	43.55	41.89	36.34	38.07	40.07		63.50		52.38
16	62.65	51.92	44.02	42.73	37.28	38.33	40.33		65.83		52.78
18	64.35	51.92	44.26	43.28	37.66	38.61	40.37		67.28		53.33
20	64.83	52.38	44.47	43.56	38.06	38.78	40.64		69.91		54.58
22	65.09	52.59	44.68	43.84	38.22	39.08	40.93		68.37		55.25
24	65.37	52.59	44.89	44.13	38.37	39.37	40.96		69.39		55.91
26		52.80	45.10		38.39	39.53	41.00		70.01		56.42
28						39.67			70.62		57.75
30											
32											

Table 8 (Continued).--Value yields per M bd. ft. of green lumber, mill tally, by species, log grade, and log diameter class

Log Diam. Class	Sugar Maple			Black Oak			Chestnut Oak			Northern Red Oak				
	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 1 Logs	Grade 2 Logs	
10			\$45.50			\$32.64								
12		\$53.36	48.91		\$37.81	35.94			\$41.52	37.44		\$58.30	\$46.29	
14	\$81.52	59.54	51.97	\$44.50	39.83	36.20		\$45.27	41.50	37.92		59.22	47.16	
16	82.82	63.80	53.84	48.83	41.32	37.81	\$53.03	46.27	41.82	38.59	\$64.00	60.95	49.25	
18	84.61	67.39	55.56	53.00	41.94	38.82	54.59	47.19	42.86	39.82	65.34	61.95	50.71	
20	86.02	69.03	56.05	56.08	42.58	39.57	56.16	47.77	43.91	40.73	68.53	63.21	52.49	
22	86.87	70.41	56.49	58.08	43.50	39.71	57.95	48.69	44.71	41.96	69.88	64.42	54.13	
24	87.72	71.69	56.84	59.15	44.06	39.95	59.51	49.70	45.73	42.29	70.88	65.43	55.27	
26	88.74	72.80	57.83	59.63	44.63	40.76	60.99	50.05	46.24	42.61	72.16	66.68	56.53	
28	89.55	74.38	58.34	60.10	45.09	41.36	62.15	52.04	46.98	43.62	73.84	68.00	57.83	
30				60.86			64.21	53.15			74.84	68.97	58.49	
32				61.75							75.65	69.08	59.40	
34											76.68	70.71	60.41	
36											77.45	71.39		
38														
40														

Table 8 (Continued).--Value yields per M bd. ft. of green lumber, mill tally, by species, log grade, and log diameter class

Log Diameter Class	N. Red Oak			Scarlet Oak			White Oak			Yellow-poplar			
	Grade 3 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs			
10	\$45.01		\$34.97			\$34.39					\$46.93		
12	46.06	\$37.83	35.94	\$53.43	\$47.42	35.86	\$70.01	\$67.03	\$53.17		47.15		
14	46.20	40.98	37.26	57.36	49.29	37.83	70.01	67.03	53.39		47.15		
16	46.78	43.75	37.32	61.11	50.88	38.82	70.85	67.40	53.99		47.59		
18	47.15	45.68	37.42	64.54	52.56	39.93	71.45	67.40	54.37		47.94		
20	47.74	47.11	37.86	67.14	54.43	41.08	71.45	68.63	54.79		48.57		
22	47.78	47.54	38.48	69.64	56.05	41.91	71.45	69.03	55.40		48.57		
24	48.69	47.78	38.52	70.98	56.32	42.17	71.45	69.49	55.83		48.96		
26	48.93	48.10		72.10	57.28	42.34	72.29	69.49	56.04		48.96		
28	49.66	48.51		74.44	58.61	42.34	72.89	69.49	56.64		49.58		
30	50.67				60.05	42.63	72.89	70.48	56.86		49.82		
32							74.93	70.48	57.66		50.68		
34							75.77	71.10	58.09				
36							76.36						
38							77.82						
40							78.42						
42							79.03						
44													

Table 9.--Value yields per M bd. ft. of green lumber, mill tally, by species, log grade^{1/}, and tree diameter class

Tree DBH Class	Ash			Basswood			Beech		Black Birch		Buckeye		Black Cherry		Chestnut	
	All Log Grades	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 3 Logs	Grade 3 Logs	Grade 3 Logs	Grade 3 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 2 Logs	Grade 2 Logs	All Log Grades	All Log Grades
14	\$49.14		\$55.13	\$45.34	\$39.53	\$32.47									\$31.19	
16	49.68		55.43	46.75	40.01	33.33									31.40	
18	50.64	\$66.45	55.43	47.87	40.61	33.97					\$41.33		\$47.65		31.39	
20	51.19	67.61	56.15	49.27	41.49	34.37					42.24		48.11		31.63	
22	51.73	68.59	56.43	51.12	42.62	34.78					43.54		48.56		31.88	
24	52.28	69.31	56.94	51.81	43.48	35.18					45.14		49.01		32.12	
26	52.82	70.02	57.66	52.05	44.34	35.59					45.64		49.47		32.38	
28	53.37	70.73	58.38	52.77	45.41	35.82					46.34		49.93		32.65	
30	54.27	71.25	59.39	53.21	45.60						46.94		49.93		32.89	
32	54.94	71.79	60.37	53.68							47.65		50.38		32.96	
34															32.97	
36															33.23	
38															33.26	
40															33.76	
42															34.26	

Tree DBH Class	Cucumber			Black Gum			Hickory		Red Maple		
	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs
14			\$41.91			\$34.44					\$37.43
16	\$59.55	\$51.46	42.62	\$41.65	\$38.51	35.12	\$39.67	\$37.75	\$63.50	50.99	43.77
18	59.92	51.92	43.09	42.03	38.62	36.05	39.85	38.03	65.21	51.42	43.91
20	60.92	51.92	43.34	42.17	39.02	36.74	39.99	38.18	66.05	51.99	44.31
22	62.65	51.92	43.58	42.58	39.27	37.26	40.25	38.47	67.29	52.82	44.45
24	64.28	52.38	43.58	43.15	39.55	37.52	40.41	38.65	67.91	53.40	44.94
26	65.47	52.59	44.04	43.42	39.83	38.07	40.59	38.85	68.52	54.01	45.19
28	65.61	52.80	44.26	43.84	39.97	38.09	40.78	39.25	69.14	54.59	45.57
30		53.01	44.92		40.36	38.50	40.91	39.44	70.62	55.16	46.19
32							41.04	39.60	71.10	55.71	46.73
34										56.00	47.50
36										56.37	47.89

^{1/} Values for a particular log grade and species are based on the assumption that all logs cut from a tree are of the same grade.

Table 9 (Continued).--Value yields per M bd. ft. of green lumber, mill tally, by species, log grade^{1/}, and tree diameter class

Tree DBH Class	Sugar Maple			Black Oak			Chestnut Oak				N. Red Oak	
	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 3 Logs
14			\$48.18			\$35.42				\$37.45		
16		\$55.90	48.89		\$39.09	35.68				37.76		
18		59.05	51.54	\$48.99	39.88	36.81				38.03		
20	\$82.91	62.25	53.94	49.23	40.19	37.26				38.49		
22	83.61	66.42	54.20	50.99	41.50	38.51	\$54.26	\$45.35		39.22		\$64.67
24	84.63	67.39	54.58	53.23	42.37	38.57	54.59	46.27		39.54		65.34
26	85.45	68.37	55.56	54.40	43.02	39.76	55.83	47.19		39.62		66.00
28	86.42	70.06	56.13	55.23	44.14	40.09	56.61	47.43		39.71		66.95
30	87.40	71.03	57.69	56.83	44.40	41.21	56.93	49.18		40.35		67.62
32	88.83			57.67	44.52	41.53	58.55	50.10		40.43		68.87
34	89.80			58.35			59.04	50.33				69.54
36				59.32			60.37	50.57				70.36
38							61.61	51.78				71.02
40												71.97
42												72.63
44												73.30
												73.89

^{1/} Values for a particular log grade and species are based on the assumption that all logs cut from a tree are of the same grade.

Table 9 (Continued).--Value yields per M bd. ft. of green lumber, mill tally, by species, log grade¹, and tree diameter class

Tree DBH Class	N. Red Oak (Cont'd)			Scarlet Oak			White Oak			Yellow-poplar			
	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Select Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 4 Logs
14			\$46.06		\$35.66			\$35.40					\$47.27
16		\$47.10	46.41	\$39.71	38.84		\$48.69	38.80					47.27
18	\$58.88	47.80	46.86	41.44	40.35	\$55.43	47.30	37.37		\$67.03		\$53.65	47.50
20	59.52	48.49	47.32	42.73	36.63	56.90	51.45	79.15	\$71.50	67.03		54.72	47.97
22	60.61	49.84	47.34	44.04	37.13	58.42	51.71	40.77	72.35	67.40		54.94	48.16
24	61.29	50.61	47.92	45.28	37.36	61.94	52.82	41.14	72.35	67.40		55.13	48.52
26	61.62	51.49	48.50	46.11	37.49	64.36	54.71	41.53	72.35	67.79		55.33	49.11
28	62.22	52.69	48.50	47.52	37.61	65.42	54.87	41.59	72.71	68.19		55.54	49.33
30	63.21	53.80	48.78	47.35		67.00	55.70	41.85	72.87	68.77		56.78	49.39
32	63.89	54.47	49.45	47.96		67.91	56.66	41.91	72.84	69.18		56.83	50.00
34	64.22	55.14	49.79			68.84	57.16	42.15	73.04	70.44		57.90	50.00
36	65.09	56.05				70.48			73.89	70.24		58.35	50.63
38	65.79	56.71							74.27	70.46		58.58	
40	66.12								74.27	70.69		59.19	
42	67.00								74.87				
44									75.10				
46									76.17				
48									77.01				

¹/values for a particular log grade and species are based on the assumption that all logs cut from tree are of the same grade.

Table 10.--Value yields per M bd. ft. of green lumber, log scale basis, by species, log grade, and log diameter class

Log Diameter Class	Ash			Basswood			Beech		Black Birch		Buckeye		Black Cherry		Chestnut
	All Log Grades	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 3 Logs	Grade 3 Logs	Grade 3 Logs	Grade 3 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 2 Logs	All Log Grades	
10	\$65.08		\$72.17	\$62.88	\$51.49	\$68.29	\$48.23				\$49.43	\$43.74	\$48.16	\$40.30	
12	58.51		66.04	55.48	46.79	61.13	39.69					41.30	46.47	37.11	
14	55.14	\$81.59		53.11	45.30	58.27	36.70					39.58	45.38	34.92	
16	52.23	78.31	60.71	51.22	43.41	56.60	34.39					38.10	44.35	33.80	
18	50.25	75.29	57.02	49.61	42.64	54.97	32.57					37.22	43.56	32.70	
20	48.91	71.98	54.27	48.20	42.01	54.45	31.28					36.06	42.60	32.01	
22	48.30	69.68	52.92	47.54	41.56	54.19	31.04					35.49	42.25	31.32	
24	47.47	68.86	52.60	46.89	40.99		30.66						41.36	31.01	
26	47.22	67.64	52.30	46.09	40.92								40.88	30.39	
28	47.54	66.56	52.01	45.53										29.94	
30														29.20	
32														28.62	
34														28.21	
36														27.54	
38														26.91	

Log Diameter Class	Cucumber			Black Gum			Hickory			Red Maple		
	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 3 Logs
10		\$74.58	\$58.68	\$45.64	\$43.92	\$39.81	\$50.44	\$51.01	\$68.80	\$54.96		\$48.26
12		64.90	51.98	45.29	41.39	37.69	48.00	46.40	68.22	53.75		45.49
14	\$81.51		47.34			37.08		44.27				43.71
16	73.56	58.01	44.02	44.51	40.25	36.55	46.06	42.59		52.38		42.58
18	69.61	53.80	41.36	43.72	39.10	35.53	44.08	41.52	68.65	51.24		41.49
20	66.68	50.85	39.35	42.92	38.13	34.92	43.18	40.40	68.93	50.29		40.40
22	63.56	48.69	38.19	42.92	37.38	34.43	42.33	39.68	68.65	49.69		39.42
24	61.12	47.17	37.25	42.36	37.12	33.96	41.77	39.17	67.91	49.71		39.74
26	59.43	46.11	36.67	42.03	36.59	33.38	40.96	38.57	67.03	49.56		39.58
28							40.20	37.96	67.04	49.70		39.45
30									67.00	49.71		39.52
32									66.94	50.44		39.43

Table 10 (Continued).--Value yields per M bd. ft. of green lumber, log scale basis, by species, log grade, and log diameter class

Log Diameter Class	Sugar Maple			Black Oak			Chestnut Oak			N. Red Oak		
	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 1 Logs
10			\$63.19			\$44.11				\$43.32		
12		\$72.11	57.54		\$45.01	39.93			\$48.56	41.14		
14	\$118.14	70.05	55.23	\$50.00	42.15	36.57	\$53.83		45.60	39.50	\$80.00	78.73
16	104.84	68.60	53.04	50.86	40.91		51.99		44.02	38.57	76.87	74.02
18	98.96	67.73	51.93	52.74	39.57	35.29	50.74		43.29	38.47	76.03	71.70
20	94.53	66.38	50.50	53.41	38.71	34.71	49.50		43.05	38.24	75.31	70.39
22	91.44	65.19	49.34	53.53	38.50	34.09	49.18		42.85	38.50	75.14	69.46
24	89.06	64.88	48.58	53.05	38.31	33.57	48.97		42.74	38.10	74.61	68.27
26	87.43	64.42	48.39	52.77	38.11	33.83	48.36		42.62	37.71	74.78	68.87
28	86.94	65.25	48.21	52.72	38.21	34.04	49.56		42.71	37.93	74.78	69.10
30				52.69			49.67				73.73	69.74
32				52.78							73.98	69.92
34											75.65	69.88
36											75.92	70.01
38											75.93	69.99
40											75.19	

Table 10 (Continued). ---Value yields per M bd. ft. of green lumber, log scale basis, by species, log grade, and log diameter class

Log Diameter Class	N. Red Oak (Cont)			Scarlet Oak			White Oak			Yellow-poplar			
	Grade 2	Grade 3	Logs	Grade 2	Grade 3	Logs	Select & Grade 1	Grade 2	Grade 3	Select Logs	Grade 1	Grade 2	Grade 3
10													
12	\$55.43	\$54.89		\$46.13	\$45.41			\$61.19	\$50.95		\$94.41	\$79.36	\$71.11
14	52.40	51.46		45.03	39.93		\$70.77	55.07	41.70	\$87.51	83.79	68.01	62.04
16	52.12	48.63		47.04	38.02		67.48	52.45	39.41	80.94	77.92	62.42	54.83
18	51.48	47.01		44.78	35.88		66.42	51.78	38.06	77.01	73.26	59.10	51.17
20	51.71	45.78		44.65	34.65		67.23	51.59	37.32	74.04	71.12	56.48	48.92
22	52.05	45.04		44.22	33.80		67.82	51.90	37.01	71.45	69.03	54.85	47.16
24	52.14	44.24		43.83	33.75		68.61	50.97	36.76	70.05	68.13	53.43	45.12
26	52.59	44.26		43.73	33.49		68.91	51.14	36.19	69.51	66.82	52.87	44.51
28	53.30	43.88		43.70			68.99	51.64	35.58	69.42	66.18	52.69	44.47
30	53.42	44.14					70.23	52.22	35.38	68.76	66.49	52.17	44.28
32	53.51	44.45								70.03	66.49	52.42	44.46
34	53.94									69.83	65.87	52.14	
36										69.42	65.53	51.87	
38										68.79			
40										68.13			
42													
44													

Table 11.--Value yields per M bd. ft. of green lumber, gross log scale, by species, log grade^{1/}, and tree diameter class

Tree DBH Class	Ash			Basswood				Beech		Black Birch		Buckeye		Black Cherry		Chestnut
	All Log Grades	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 3 Logs	Grade 2 Logs	Grade 3 Logs	Grade 3 Logs	Grade 2 Logs	Grade 3 Logs	Grade 2 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 2 Logs	All Log Grades	
14	\$59.20		\$68.06	\$59.66	\$49.11	\$65.06	\$42.72					\$50.10	\$42.23	\$47.65	\$40.25	
16	56.45		65.21	56.33	47.07	62.65	40.16						41.08	47.17	38.29	
18	55.04	\$80.06		54.40	45.63		37.96					49.69	40.20	46.69	36.50	
20	53.60	78.62	63.09	52.98	45.10	60.81	36.37					49.48	39.18	46.24	34.76	
22	52.79	77.94	61.34	52.70	44.86	59.18	34.95					49.88	38.71	45.59	33.74	
24	51.76	77.01	59.94	51.30	44.37	57.96	33.99					49.34	38.14	45.39	33.11	
26	51.03	76.11	58.84	49.57	43.90	57.16	33.26					49.04	37.60	45.19	32.38	
28	50.35	75.24	57.80	48.64	43.87	56.87	32.27					48.90	37.08	44.58	32.01	
30	50.02	74.61	57.66	47.51	43.02							48.62	36.58	44.58	31.63	
32	49.50	74.01	56.95	46.48											31.09	
34															30.67	
36															30.49	
38															30.10	
40															30.14	
42															30.19	

^{1/} Values for a particular log grade and species are based on the assumption that all logs cut from a tree are of the same grade.

Table 11 (Continued).---Value yields per M bd. ft. of green lumber, gross log scale, by species, log grade^{1/}, and tree diameter class

Tree DBH Class	Cucumber			Black Gum			Hickory			Red Maple		
	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	
14			\$54.78			\$39.14					\$47.38	
16		\$67.71	51.35		\$42.79	38.17	\$49.28	45.76	\$73.84	\$54.73	45.07	
18	\$77.34	64.10	48.42	\$46.02	41.30	37.55	47.72	44.74		53.56	43.97	
20	73.07	61.08	46.11	45.44	40.65	37.11	46.50	43.63	73.68	52.78	43.44	
22	71.25	58.34	44.24	44.86	40.07	36.53	45.74	42.74	72.58	52.30	42.74	
24	70.79	56.32	42.31	44.59	39.55	36.08	44.90	42.01	72.75	52.35	42.40	
26	70.25	54.22	41.35	44.48	39.05	35.75	44.12	41.33	72.24	51.93	42.23	
28	69.65	52.80	40.05	44.31	38.43	34.94	43.61	41.10	71.75	51.99	42.00	
30	67.64	51.22	39.40	44.28	38.08	34.68	43.06	40.66	71.28	51.79	41.99	
32							42.53	40.20	71.18	51.88	42.09	
34									70.97	51.61	42.41	
36									70.75	51.48	42.38	

^{1/} Values for a particular log grade and species are based on the assumption that all logs cut from a tree are of the same grade.

Table 11 (Continued).--Value yields per M bd. ft. of green lumber, gross log scale, by species, log grade^{1/}, and tree diameter class

Tree DBH Class	Sugar Maple			Black Oak			Chestnut Oak			N. Red Oak		
	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 1 Logs	Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 1 Logs
14			\$59.48			\$41.19						
16		\$70.76	56.20		\$43.43	38.57						
18	\$110.55	70.30	56.02	\$53.25	41.98	37.95		\$52.73	\$47.74	40.39	\$80.84	\$75.97
20	106.51	71.14	56.19	51.28	40.80	36.89		51.99	45.64	38.81	79.20	74.40
22	101.96	72.99	54.47	51.77	40.69	36.68		51.86	44.52	38.11	77.65	73.47
24	100.53	71.69	52.99	52.97	40.55	35.71		51.00	43.80	37.71	77.65	72.11
26	99.33	70.48	52.42	53.07	40.21	36.15		51.77	43.48	36.95	77.40	71.24
28	98.20	70.41	51.73	53.11	40.50	35.79		52.19	43.13	35.77	76.84	70.78
30	97.08	69.64	51.74	53.61	40.18	36.15		51.36	42.98	35.71	76.52	70.23
32	96.04			53.90	39.75	35.80		51.08	42.84	35.16	76.00	69.83
34				53.78				60.37			75.66	69.05
36				53.93				61.00			75.55	69.24
38											75.36	68.89
40											74.88	68.16
42											74.42	68.02
44											73.89	

^{1/} Values for a particular log grade and species are based on the assumption that all logs cut from a tree are of the same grade.

Table 11 (Continued).--Value yields per M bd. ft. of green lumber, gross log scale, by species, log grade^{1/}, and tree diameter class

Tree DBH Class	N. Red Oak (Cont)			Scarlet Oak			White Oak			Yellow-poplar			
	Grade 2 Logs	Grade 3 Logs	Grade 2 Logs	Grade 2 Logs	Grade 3 Logs	Select & Grade 1 Logs	Select Grade 2 Logs	Grade 3 Logs	Select Logs	Grade 1 Logs	Grade 2 Logs	Grade Logs	Logs
14	\$54.77	\$53.25	\$46.17	\$41.95	\$60.06	\$45.68	\$89.38	\$72.50	\$88.20			\$65.65	
16	53.41	51.17	45.56	39.17	57.69	42.12	83.79	68.70				60.60	
18	52.71	49.85	46.49	37.67	56.23	41.07	80.72	65.93				57.23	
20	52.46	49.45	45.17	36.63	54.38	40.78	83.64	63.15				54.82	
22	52.18	47.58	45.28	35.87	53.35	40.77	81.29	61.48				53.14	
24	52.27	47.21	45.43	35.25	52.85	39.75	79.90	59.82				51.62	
26	52.69	47.09	44.95	34.71	52.26	38.87	78.35	58.77				50.93	
28	53.00	46.41	45.10	34.19	52.06	37.98	76.88	58.42				49.88	
30	52.88	46.02	45.25		51.73	36.93	75.30	57.90				48.89	
32	53.02	45.68			69.44	36.65	75.02	57.90				48.54	
34	53.13						74.27	57.49				47.62	
36	53.25						73.53	56.60				47.54	
38							73.04						
40							72.21						
42							71.86						
44							71.31						
46													
48													

^{1/} Values for a particular log grade and species are based on the assumption that all logs cut from a tree are of the same grade.

